



V I K I N G
P U R E S O L U T I O N S

Novel Coronavirus (COVID-19) Response

Electrochemically Activated, On-Site Generated,
Cleaning + Disinfecting Solutions

EPA est #87542-FL-001



Viking Pure Solutions is Prepared + Equipped to meet the challenge of COVID-19

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Coronaviruses are enveloped viruses, meaning they are one of the easiest to kill with the appropriate disinfectant product...

-The EPA

What is Coronavirus?

Coronaviruses are enveloped viruses from the Coronaviridae family that can cause illnesses ranging from common cold to much more serious diseases and can infect both humans and animals, according to the World Health Organization (WHO).

The new strain, Novel Coronavirus COVID-19, was first identified in Wuhan, China in January 2020, and is related to two other coronaviruses that have caused outbreaks in recent years: Middle East respiratory syndrome, also known as MERS, and severe acute respiratory syndrome, or SARS.

Coronavirus Symptoms + Disease

According to the Centers for Disease Prevention and Control (CDC), patients with confirmed novel coronavirus infections (COVID-19) have reportedly had mild to severe respiratory illness with symptoms of:

- Fever
- Cough
- Shortness of breath

Symptoms of the novel coronavirus 2019-nCoV may appear in as few as 2 days or as long as 14 days after exposure. This is based on what has been seen previously as the incubation period of MERS viruses.

Implementation of Proper Environmental Infection Control

Routine cleaning and disinfection procedures are appropriate for COVID-19 in all settings.

Products with EPA-approved Emerging Viral Pathogens claims are recommended for use against COVID-19. These products can be identified by the following claims:

“[Product name] has demonstrated effectiveness against viruses similar to COVID-19 on hard non-porous surfaces. Therefore, this product can be used against COVID-19 when used in accordance with the directions for use against [name of supporting virus] on hard, non-porous surfaces.”

Specific claims for “COVID-19” will NOT appear on the product or master label.

If there are no available EPA-registered products that have an approved emerging viral pathogen claim for COVID-19, products with label claims against human coronaviruses should be used according to label instructions.



Emerging Viral Pathogen Claim

EPA and the Centers for Disease Control and Prevention (CDC) recognize that certain microorganisms can be ranked with respect to their tolerance to chemical disinfectants. The Spaulding Classification model, used by CDC, tiers microorganisms in accordance with the level of resistance to being killed (inactivation) by typical disinfectant products. With the approach viruses are divided into three viral subgroups (small non-enveloped, large non-enveloped, and enveloped) based on their relative resistance to inactivation (see below). According to this hierarchy, if an antimicrobial product can kill a small, non-enveloped virus it should be able to kill any large, non-enveloped virus or any enveloped virus. Similarly, a product that can kill a large, non-enveloped virus should be able to kill any enveloped virus.

Small, Non-Enveloped Viruses (<50 nm)

These small, non-enveloped viruses can be highly resistant to inactivation by disinfection. Despite the lack of a lipid envelope, these organisms have a very resistant protein capsid. The following are viral families in the small non-enveloped subgroup: (1) Picornaviridae, (2) Parvoviridae, (3) Caliciviridae, (4) Astroviridae, and (5) Polyomaviridae.



Large, Non-Enveloped Viruses

Compared to small, non-enveloped viruses, these viruses are less resistant to inactivation by disinfection. Although they have a resistant protein capsid, their larger size (50-100 nm) makes them more vulnerable than their smaller viral counterparts. The following are viral families in the large non-enveloped subgroup: (1) Adenoviridae, (2) Reoviridae, and (3) Papillomaviridae.

Enveloped Viruses

Enveloped viruses are the least resistant to inactivation by disinfection. The structure of these viruses includes a lipid envelope, which is easily compromised by most disinfectants. Once the lipid envelope is damaged, the following are viral families in the enveloped subgroup: (1) Arenaviridae, (2) Bornaviridae, (3) Bunyaviridae, (4) Coronaviridae, (5) Filoviridae, (6) Flaviviridae, (7) Hepadnaviridae, (8) Herpesviridae, (9) Orthomyxoviridae, (10) Paramyxoviridae, (11) Poxviridae, (12) Retroviridae, (13) Rhabdoviridae, and (14) Togaviridae.



Product Eligibility Criteria

Registrants should use the following criteria to determine if an EPA-registered disinfectant product is eligible to use the process described in this Guidance. An eligible product should meet both of the following criteria:

1. The product is an EPA-registered, hospital/healthcare or broad-spectrum disinfectant with directions for use on hard, porous or non-porous surfaces.
2. The currently accepted product label (from an EPA registered product as described above in III.1) should have disinfectant efficacy claims against at least one of the following viral pathogen groupings:
 - a. A product should be approved by EPA to inactivate at least one large or one small non-enveloped virus to be eligible for use against an enveloped emerging viral pathogen.
 - b. A product should be approved by EPA to inactivate at least one small, non-enveloped virus to be eligible for use against a large, non-enveloped emerging viral pathogen.
 - c. A product should be approved by EPA to inactivate **at least two** small, non-enveloped viruses with each from a different viral family to be eligible for use against a small, non-enveloped emerging viral pathogen.



Product Eligibility Criteria

This approach, where disinfectant products registered for use against viral pathogens in one category of the Spaulding Classification model can be presumed effective against viral pathogens in less-resistant categories, is intended to serve as a conservative approach to identifying disinfectant products likely to be effective against emerging pathogens. However, since there is no viral subgroup known to be more resistant than small, non-enveloped viral pathogens, a disinfectant product must be proven to be efficacious against at least two small, non-enveloped viral pathogens from different viral families in order to be eligible for emerging pathogen claims pursuant to this guidance in regard to an outbreak of an emerging small, non-enveloped viral pathogen.

Can Viking Pure Solutions Help Against COVID-19?

The products listed below have demonstrated effectiveness against multiple small non-enveloped viruses on hard, nonporous surfaces.



PureSan

Salt-free + Safe Disinfecting Solution

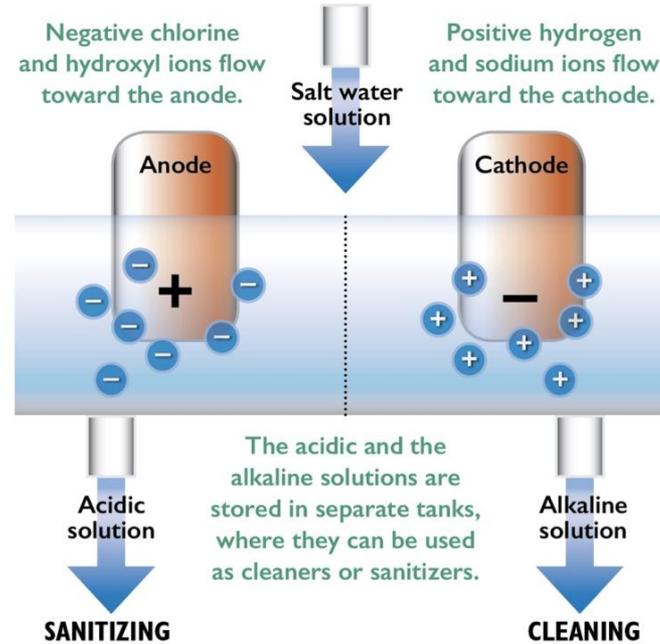


PureClean

Degrease + Decontaminate Surfaces

Electrochemically Activated, Salt-Free, On-Site Generated, Cleaning + Disinfecting Solutions

Electrolyzed Water is the result of a process called electrolysis. It is the process where salt (NaCl) is electrically separated into its two main ions; Sodium (Na) and Chloride (Cl).



Electrochemically Activated, Salt-Free, On-Site Generated, Cleaning + Disinfecting Solutions

Those two ions are then mixed into two separate streams of fresh water thus making two very useful solutions:



PureSan

Hypochlorous Acid (HOCl): a strong sanitizing solution



PureClean

Sodium Hydroxide (NaOH): a very powerful cleaner, degreaser

Viking Pure Solutions are Green Sanitizers that can claim:

Superior Kill Capability of all known Bacteria, Virus, Fungus, and Antibiotic Superbugs

Non-Toxic

Leaves no Residue/Salt Free

Inability for Microorganisms to Develop Resistance

Can Viking Pure Support Your Facility?



PureSan

Salt-free + Safe Disinfecting Solution



Viking Pure PureSan is ON-SITE generated hypochlorous acid (HOCL) and will serve as a major weapon in the battle for infection control by acting swiftly and safely against all classes of hazardous microbes. The fluid is non-toxic, made from environmentally safe and sustainable materials, and can be used for surface disinfection and decontamination.



PureClean

Degrease + Decontaminate Surfaces



Viking Pure PureClean is ON-SITE generated Sodium Hydroxide (NaOH) and is a powerful detergent that has a wide range of uses within any cleaning process.



PureSan

Salt-free + Safe
Disinfecting Solution

Proven Efficacy + Safety: Kill List

Bacteria:

Pseudomonas aeruginosa (*Pseudomonas*) (ATCC 15442)

Staphylococcus aureus (Staph) (ATCC 6538)

Antibiotic Resistant Bacteria:

Methicillin Resistant *Staphylococcus aureus* (MRSA) (ATCC 33592)

Virus Small Non-Enveloped:

Rhinovirus type 37 (ATCC-VR-1147 Strain 151-1)

Norovirus (As Feline Calicivirus ATCC VR-782)

Virus Enveloped:

Human Coronavirus (ATCC VR-740, Strain 229E)

Fungus:

Trichophyton interdigitale (ATC 9533)



PureSan

Salt-free + Safe
Disinfecting Solution

*****The above meets Efficacy
Requirements for EPA approved LIST N
Products: Emerging Viral Pathogens**

All testing was conducted in compliance with U.S. Environmental Protection Agency Good Laboratory Practices (GLP) regulations set forth in 40 CFR Part 160; Per EPA guidelines for Efficacy of Disinfection all testing is completed in SOILED conditions without pre-cleaning

Proven Efficacy + Safety: Hospital Grade Disinfectant

Hospital Grade Disinfection: AOAC Use-Dilution Method: Pseudomonas aeruginosa (ATCC 15442) and Staphylococcus aureus (ATC 6538)

- Study Completion Date: February 26, 2020
- Analytical Lab Group; Eagen, MN
- Test Guideline: OCSPP 810.2200
- **Result: PASS; >5-log Reduction**

MRSA: AOAC Use-Dilution Method Methicillin Resistant Staphylococcus aureus-MRSA (ATCC 33592)

- Study Completion Date: February 20, 2020
- Analytical Lab Group; Eagen, MN
- Test Guideline: OCSPP 810.2200
- **Result: PASS; >5-log Reduction**



PureSan

Salt-free + Safe
Disinfecting Solution

*****The above meets Efficacy
Requirements for EPA approved LIST N
Products: Emerging Viral Pathogens**

All testing was conducted in compliance with U.S. Environmental Protection Agency Good Laboratory Practices (GLP) regulations set forth in 40 CFR Part 160; Per EPA guidelines for Efficacy of Disinfection all testing is completed in SOILED conditions without pre-cleaning

Proven Efficacy + Safety: Small Non-Enveloped Viruses

Small Non-Enveloped Virus: Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces Utilizing Feline Calicivirus as a Surrogate Virus for Norovirus

- Study Completion Date: February 19, 2020
- Virus: Calicivirus (Caliciviridae Family)
- Analytical Lab Group; Eagen, MN
- Test Guideline: OCSPP 810.2200
- **Result: PASS; >4-log Reduction**

Small Non-Enveloped Virus: Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces

- Study Completion Date: February 19, 2020
- Virus: Rhinovirus type 37 (Picornaviridae Family)
- Analytical Lab Group: Eagen, MN
- Test Guideline: OCSPP 810.2200
- Result: **PASS; >4-log Reduction**



PureSan

Salt-free + Safe
Disinfecting Solution

*****The above meets Efficacy
Requirements for EPA approved LIST N
Products: Emerging Viral Pathogens**

All testing was conducted in compliance with U.S. Environmental Protection Agency Good Laboratory Practices (GLP) regulations set forth in 40 CFR Part 160; Per EPA guidelines for Efficacy of Disinfection all testing is completed in SOILED conditions without pre-cleaning

Proven Efficacy + Safety: Human Coronavirus

Human Coronavirus: Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces

- Study Completion Date: March 20, 2020
- Virus: Human Coronavirus (ATCC VR-740, Strain 229E)
- Analytical Lab Group: Eagen, MN
- Test Guideline: OCSPP 810.2200
- Result: **PASS; >4-log Reduction**



Proper Application Requirements

Viking Pure 2-Step Cleaning Procedure

Step 1

General Cleaning

Thoroughly wipe down area with **PureClean** solution, suggest following 4-side microfiber folding method. Mop all hard surfaces with **PureClean** solution.

Step 2

Disinfecting

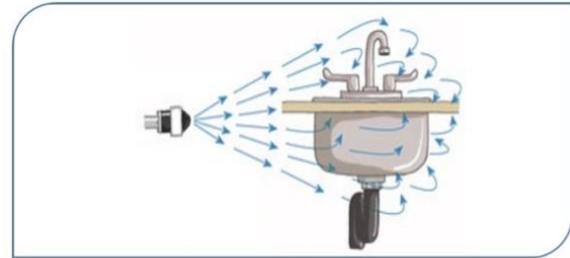
Apply 200ppm **PureSan** in area using the Electrostatic Sprayer (E-Mist), or thoroughly wipe down area with **PureSan**. Suggest following 4-side microfiber folding method and mopping all hard surfaces with **PureSan** solution.

Proper Application Requirements

Reinforcing good habits with custodial team, I.E. dispensing of Pure solution at the beginning of each shift to maintain a fresh solution batch on-hand and or as needed and emptying of all Pure solutions at end-of-shift.

Performing Viking Pure System visual inspection of salt and water levels, and good document practices with daily logs by onsite team members, supervisor, and management.

Management and supervisor to perform random strip testing of PureClean and PureSan bottles and E-Mist Sprayer on-hand when being used by staff or found in carts. To maintain highest solution integrity and used for re-training staff when needed.



Viking Pure Solutions: In Summary

Enveloped Viruses, such as COVID-19 of the Coronaviridae family of viruses, are much more susceptible to disinfection than small non-enveloped viruses like Feline Calicivirus and Rhinovirus type 37.

Products with EPA Registration as Hospital Grade Disinfectant and Emerging Viral Pathogen claims are recommended to properly disinfect COVID-19. These products have obtained the Emerging Viral Pathogen claims to cover all virus types by demonstrating efficacy against at-least 2 separate small non-enveloped viruses.

- Viking Pure Solutions PureSan has completed and passed the AOAC Use-Dilution Method: *Pseudomonas aeruginosa* (ATCC 15442) and *Staphylococcus aureus* (ATC 6538) which is the required test for EPA Hospital Grade Disinfection.
- Viking Pure Solutions PureSan has completed and passed both Virucidal Efficacy of a Disinfectant for Use of Inanimate Environmental Surfaces Utilizing Feline Calicivirus as a Surrogate Virus for Norovirus and Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces: both of which are small non-enveloped viruses of different genus that would be required to obtain the Emerging Viral Pathogen claim via the EPA.
- Viking Pure Solutions two step cleaning and disinfecting process will quickly and safely disinfect all surfaces. Viking Pure Solutions are generated on-site within your facility, you are non-toxic and salt-free!



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